Status Report of the International Cloud Working Group activities

Presented to CGMS-54 Plenary session, agenda item 5
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Coordination Group for Meteorological Satellites

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Executive summary of the WP

This presentation presents the activities and relevant discussion items of the ICWG since the CGMS-53 meeting. It includes an update on ICWG-4 planning (October 2026) and a discussion of the HLPPs and related actions.

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ICWG Rapporteur

Andy Heidinger (NOAA) is stepping down as ICWG rapporteur. A call for a new rapporteur is out.

ICWG-4 Update

- Originally planned for October 2025 but was postponed
- 19-23 October 2026 (in person, with hybrid option)
- Location: Ewha Womans University, Seoul, South Korea
- Host: Yong-Sang Choi (EWU)
- Website: https://www.eventsforce.net/icwg-4

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ICWG Review of HLPP 2025–2029

- **HLPP recommended for reformulation or removal**
  - 4.41 Establish a common vocabulary and methodology with appropriate error propagation to include the errors associated with validation data (e.g. radiosonde temperature, water vapour, precipitation and winds).
    - ***We have made no progress and are focusing on the GEO-Ring intercomparison that inherently includes these principles.***
- **HLPP recommended for update**
  - 4.9 Identify AI/ML technologies for applying to the product processing and data management infrastructure and develop best practices
    - ***Given the ubiquity of AI/ML for cloud remote sensing, we recommend updating this to focus on the generation of community standards and tools to enable AI/ML training on EarthCare.***

ICWG Review of HLPP 2025–2029

- **HLPP showing good implementation progress**
  - Assess the cloud properties generated from the geostationary and polar orbiting imagers and pursue best practices that lead to improved consistency and accuracy across the globe and the Geostationary ring;
    - ***Through our ISCCP-NG/Geo-Ring topical group, we have maintained an active role in evaluating Geo-Ring datasets, and the Geo-Ring will serve as the common L1B input for the next cloud dataset inter-comparison.***
- **Emerging topics for future HLPP consideration**
  - Generating cloud properties within the emerging GEO-Ring of Hyperspectral Sounders.
    - ***IR imager and sounder cloud retrievals historically have had a strong focus within ICWG; the Geo-Ring IR sounders offer a natural extension of these efforts. This will be discussed in our next inter-sessional.***

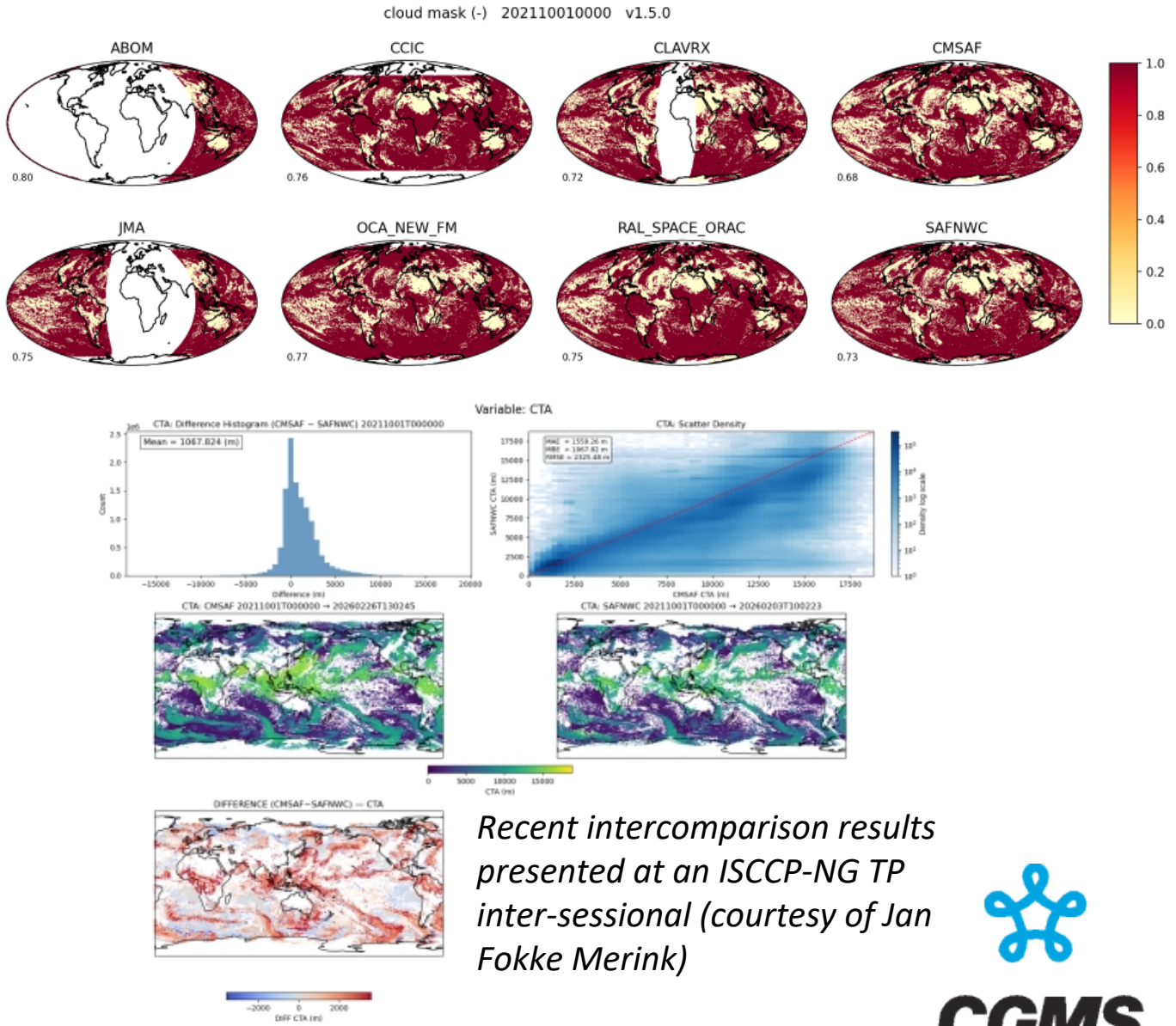
HLPP 4.2.4

Target:

- Assess the cloud properties generated from the geostationary and polar orbiting imagers and pursue best practices that lead to improved consistency and accuracy across the globe and the Geostationary ring;

Implementation Status (ICWG updates):

- An intercomparison/assessment of contributed cloud products is a high priority for the next ICWG-4. This effort will use the new ISCCP-NG L1G dataset as the common input for all participating algorithms.
  - Golden Days: 1 Oct 2021. Proposed additions: 2-5,20-23 Dec 2025; 31 Jan 2026
  - Reformatting/re-gridding tool developed to facilitate the intercomparison
- The use of the ISCCP-NG L1G serves a two-fold purpose – it provides a common framework for evaluating a variety of cloud algorithms, and it enables an evaluation of the L1G datasets themselves via assessments of retrieval performance on these inputs. The latter provides a pathway for ICWG to provide feedback to the ISCCP-NG/Geo-Ring development effort.
- The ICWG ISCCP-NG Topical Group is coordinating these intercomparison efforts and liaising with the L1G development community.



Recent intercomparison results presented at an ISCCP-NG TP inter-sessional (courtesy of Jan Fokke Merink)

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HLPP 4.3.3

Target:

- Coordinate and improve the use of cloud properties in the high impact applications, in particular Atmospheric Motion Vectors and All-Sky Radiance Products .

Implementation Status (ICWG updates):

- We have maintained a shared topical group with IWWG on cloud height retrievals.
- Continuation of these activities will be discussed in our next inter-sessional and/or ICWG-4 meeting.

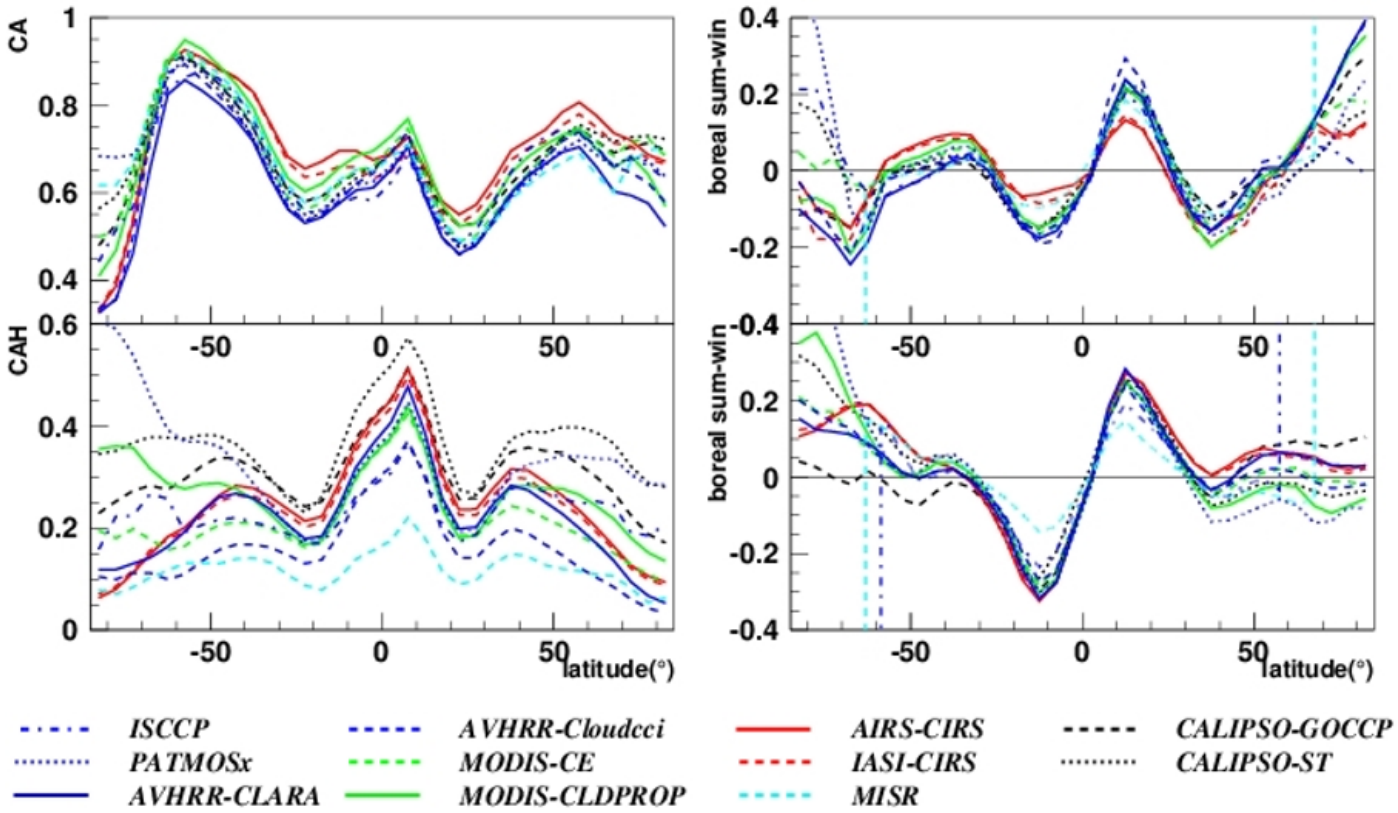
HLPP 4.3.4

Target:

- Support the continued analysis and growth of the cloud climatology assessment data archive initiated by GEWEX and the coordinate the development and assessment of cloud climate products for the next generation of the International Cloud Climatology Project (ISCCP-NG)

Implementation Status (ICWG updates):

- Most ICWG algorithm teams contributed datasets to the most recent GEWEX cloud assessment (Stubenrauch et al., 2024).
- The ISCCP-NG project is expected to leverage the Geo-Ring L1G under development by EUMETSAT and NOAA and that will serve as the common input for our next cloud property intercomparison exercise.
- That intercomparison exercise, and related algorithm coordination efforts, are being actively led by the ICWG ISCCP-NG/Geo-Ring Topical Group. An update on these efforts and discussion of next steps is expected at the upcoming ICWG-4.



From Stubenrauch et al. (2024)

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HLPP 4.4.1

Target:

- Establish a common vocabulary and methodology with appropriate error propagation to include the errors associated with validation data (e.g. radiosonde temperature, water vapour, precipitation and winds).

Implementation Status (ICWG updates):

- We have not seen much action here.

Recommendation:

- Our GEO-Ring intercomparison efforts inherently include these principles, so we suggest retiring this one.

HLPP 4.9

Target:

- Identify AI/ML technologies for applying to the product processing and data management infrastructure and develop best practices

Implementation Status (ICWG updates):

- Many ICWG algorithms already employ AI/ML in some capacity.
- ICWG members are active in developing AI/ML analogs of their physical algorithms or forward models
- Given the passivation of CALIPSO/CloudSat, EarthCare now is of high interest for AI/ML algorithm training

Recommendation:

- Suggest reformulating into an action to develop community tools for generating EarthCare training data.

To be considered by CGMS:

- ☐ Continue agency support for a GEO-Ring of imagers and for free and open access to those datasets
- ☐ Encourage space agencies to participate in the GEO-Ring cloud product intercomparisons.
- ☐ Given the ubiquity of AI/ML for cloud remote sensing, we recommend an action on the generation of community standards and tools to enable AI/ML training on EarthCare.